## REMARKS

Applicants respectfully request consideration and allowance of claims 97-99, 102-112 and 129-136 that are pending in the above-identified patent application. Applicants have amended claim 97, canceled claim 100, and added new claims 135-136. No new matter has been added by the claim amendments.

**Rejections under 35 U.S.C. § 103(a)**

In numbered parts 2-7 of the Office Action, the Examiner rejected independent claim 97, and dependent claims 98, 99, 102, 104, 105-110, 112, 129-134 under 35 U.S.C. § 103(a) as being obvious in view of U.S. 6,010,579 ("the '579 reference"), U.S. 6,610,582 ("the '582 reference"), and U.S. 5,343,064 ("the '064 reference"). Applicants have amended claim 97 to include the limitations of dependent claim 100, rendering the Examiner's rejections as to these claims moot.

In numbered part 8 of the Office Action, the Examiner rejected claims 100 and 111 as being obvious over the '579 reference, the '582 reference, the '064 reference, U.S. 6,825,909 ("the '909 reference"), and "Resistivity of Glass," (http://hypertextbook.com/facts/2004/JaneGolubovskaya). As claim 97 now includes the limitations of canceled claim 100, Applicants will address this rejection with reference to claim 97. Claim 97 includes the following limitations:

> material S;
>
> material S with an enhanced oxygen content;
>
> material G with a reduced positive ion concentration for at least one type of positive ion;
>
> material G with an enhanced positive ion concentration for at least one type of positive ion; and
>
> material G, wherein
>
> the surface of material S farthest from material G is an exfoliation surface, and
>
> the oxide glass or oxide glass-ceramic has a 0-300°C coefficient of thermal expansion CTE and a 250°C resistivity ρ which satisfy the relationships:
>
> $5x10^{-7}/°C \leq CTE \leq 75x10^{-7}/°C$, and
>
> $\rho \leq 10^{16}$ Ω-cm,
>
> said oxide glass or oxide glass-ceramic having a strain point of less than 1,000°C.

Although admitting that the '064 reference fails to disclose the claimed relationships among the coefficients of thermal expansion and resistivity, the Examiner makes two allegations: (1) that CTE and resistivity are inherent properties of glass; and (2) that the '909 reference (at column 4, lines 60-67) and the Resistivity of Glass article discloses such relationships. As to the Examiner's first allegation, Applicant is not trying to claim the basic properties of CTE and resistivity in glass. Rather, Applicants are claiming certain relationships among CTE and resistivity in the context of a semiconductor-to-glass bonded structure in which ions have migrated and certain properties have been achieved as a result. Thus, it is submitted that the grounds for the Examiner's rejection simplify to his second allegation: that the '909 reference and the Resistivity of Glass article discloses the claimed CTE and resistivity relationships. Applicant respectfully disagrees with the Examiner's conclusion as to the teachings of these references.

The cited portion of the '909 reference (column 4, lines 60-67) states:

> With the processing temperature ranges for making liquid crystal displays being between 0 degrees Celsius (degs. C.) and 300 degs. C., Corning 1737 is a preferable glass material because it is readily availability and its coefficient of thermal expansion (Corning 1737 CTE=37.6.times.10.sup.-7 / deg. C.) is very close to that of silicon.

While this section of the '909 reference discloses that Corning 1737 glass has a CTE of $37.6 \times 10^{-7}$ /°C, it does not disclose that the claimed CTE is to be employed in combination with a bonded glass-to-semiconductor structure with the claimed ion concentrations, oxygen content and resistivity properties. This leads us to the deficiencies of the Resistivity of Glass article. Besides disclosing some resistivities of glass in the $10^{14}$ Ω-cm, there is no disclosure or suggestion to employ a glass having the properties of 250 °C resistivity of less than $10^{14}$ Ω-cm in the context of the structure and properties of the other limitations of claim 97. While the Examiner has found some teachings in the prior art, he has not established that one skilled in the art would be lead to combine them in the way that is claimed. Instead, it is believed that the Examiner has used Applicant's disclosure as the blueprint to pick and choose snippets of disclosure from five references to patch together an argument that claim 97 is obvious. This is

not permitted as the motivation to combine the claimed elements is found only in Applicants' disclosure. It would be error for the Examiner to rely on same; indeed, such is improper hindsight reconstruction. M.P.E.P. § 2145 (X)(A).

Applicant submits that the above arguments regarding claim 97 also apply to claim 111 and new claim 136, which includes the limitations of claim 97 prior to the present amendment and the limitations of claim 111.

Accordingly, Applicants submit that independent claims 97 and 136 are patentable over the cited references. Further, any dependent claims from claim 97 are believed patentable in light of the showing above.

In numbered part 9 of the Office Action, the Examiner rejected claim 103 as being obvious over the '579 reference, the '582 reference, and further in view of US 2004/0020173. Applicant has added new claim 135, which includes the limitations of claim 97 prior to the present amendment and the limitations of claim 103. New claim 135 reads as follows:

> 135. A semiconductor-on-insulator layered structure comprising a substantially single-crystal semiconductor material (material S) and an oxide glass or an oxide glass-ceramic which comprises positive ions (material G), wherein at least a part of the structure comprises in order:
>
> material S;
>
> material S with an enhanced oxygen content;
>
> material G with a reduced positive ion concentration for at least one type of positive ion;
>
> material G with an enhanced positive ion concentration for at least one type of positive ion; and
>
> material G,
>
> wherein the surface of material S farthest from material G is an exfoliation surface, and the bond strength between material S and material G is at least 8 joules/meter$^2$.

The Examiner takes the position that 2004/0020173 inherently discloses a bond strength of greater than 8 joules/meter$^2$, by relying on his understanding of the fracture strength of glass. Indeed, neither fracture strength nor the claimed bond strength is mentioned in paragraphs 9 and 53 of 2004/0020173 cited by the Examiner. As establishing inherency is not an easy burden (i.e., the inherent disclosure must necessarily follow from the express disclosure), it appears that the

Examiner is relying upon personal knowledge in supplying the disclosure. As such, Applicants respectfully request that the Examiner cite a reference that supports his position or provide an affidavit or declaration setting forth specific factual statements and an explanation to support his position in accordance with M.P.E.P. § 2144.04(C). Absent the above, Applicants submit that claims 103 and new claim 135 are patentable over the cited references.

**Conclusion**

Applicants respectfully request early and favorable action in view of the above remarks and amendments. It is not believed that any fees are due. In the event there are any fees due and owing in connection with this matter, please charge same to our Deposit Account No. 11-0223.

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Respectfully submitted,

By: _____

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